



Welcome to Issue 31 of the A+M Newsletter! I am pleased to announce the launch of the [new AMWG website](#), and I thank Kat Szabó for her perseverance in developing the original website and managing it for 16 years. I invite the AMWG community to visit the new site and welcome any feedback or suggestions. Our new [members page](#) also provides the opportunity for members to add a short biography to the website. The page is designed to share our interests and work within the AMWG community. The AMWG group also has a dedicated email address (amwg.icaaz@gmail.com), currently managed by the Newsletter Editor. Please send all future communications to this address and your query will be forwarded to the relevant person.

About the Newsletter

The Archaeo + Malacology Newsletter warmly invites contributions related to archaeomalacology in its widest sense. Please email submissions and questions to the editor.

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Annual deadlines are 31st January for circulation in February and 31st July for circulation in August. Current and previous issues of the newsletter are available at archaeomalacology.wordpress.com

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Archaeomalacology Working Group at the ICAZ Conference, 7th September 2018

by Laura Le Goff

During the last ICAZ Meeting in September 2018 in Ankara, the Archaeomalacology Working Group (AMWG) met for a session entitled “Shells of molluscs as archaeological and environmental records”. About 40 participants attended the 12 oral presentations and three posters that were presented. A very diverse program included different approaches and chrono-geographical areas, from the Pleistocene to the Middle Ages, on several continents. The session started with palaeoenvironmental reconstructions: some works focused on the presence of certain taxa in attempt to understand the evolution of surrounding landscapes, others focused on the chemical record within the shell itself. The use of shells as raw material for beads and other decorative objects was discussed, showing the variety of techniques used to modify and shape the molluscs shells. The use of shells as building materials was also discussed. Several presentations focused on the role played by invertebrates in the diet of populations from all periods, as recurrent food on littoral settlements or as a special delicacy in the desert. While the main focus was on molluscs, crustaceans were also represented with the discovery of shrimp remains on a Roman site. Finally, several speakers discussed more global syntheses about long-distance trade and distribution patterns to better apprehend cultural identities and the connectivity between them.

This session was followed by the ArchaeoMalacology Group Meeting during which the group started planning the next AMWG meeting. It was decided that it would be held in Pune, India, in the fall of 2020. Other discussions raised the need of increasing the visibility of the discipline and highlight the importance of its results through publication. The participants of this last session likewise agreed to partake in the publication of a special issue to be published by the open-access journal *Anthropozoologica* (pending final approval of the journal). Finally, this meeting ended with a lively discussion about the role of archaeomalacology within archaeozoology, archaeology and history in general. A few concerns were expressed during this discussion. Firstly, several people feel that archaeomalacology is still a bit “behind”, a “not really important field”, and even a “luxury” when the fundings are insufficient, and the reason probably lays partly in the teaching strategies. The chairs dedicated to archaeomalacology are very few indeed, and students are rarely exposed to this

discipline if they meet no specialist during their student course (either within the pedagogical team of the faculty or the scientific team studying the archaeological site where they do their internships). In a very similar way, the museum displays are very important to raise awareness of the discipline, and we are still lacking these. Secondly, there are recurrent problems arising from the idea that archaeomalacology is easy and can be conducted by non-specialists, leading to numerous misidentifications in reports and papers. Moreover, we can argue that archaeomalacology, as for all the other branches of archaeozoology, does not consist solely on identifying species. An overview of the works of archaeomalacologists for these last decades is sufficient to be convinced. Thirdly – and it does not concern only archaeomalacology but archaeology in general – we are at a time of great scientific emulation based on the application of physico-chemical methods to archaeology. More and more projects are based on these “shiny” techniques that represent truly great advances in knowledge. As innovative and increasingly essential they may be, it should not be forgotten that for the time being, the information we thus obtain are very specific and limited in time and space. They cannot – yet – produce great synthesis, answering general questions. It is therefore imperative to continue the core work using traditional and proven methodologies, even if it is sometimes more difficult to acquire fundings. Finally, the decreasing number of trained taxonomists, maintaining reference collections, has also raised worries, as it might complicate our work in the future.

Alongside these concerns, it was also enhanced that malacofauna is more and more taken into account, and it cannot be denied that the discipline is increasingly acknowledged. As proof of the dynamics inside our group, several propositions were made to further improve our visibility. For example, it would be interesting to start a common reflection about a specific question or taxa. All contributions could be combined and presented at the next meeting, to finally release a paper with this great world overview. This project could be conducted through a longer period of time and include different specialities. It has also been suggested to held in the next ICAZ Conference a specific session about the teaching of archaeomalacology. All these propositions suggest the importance of collaboration and, to facilitate it, a global reflection should be conducted about our core data. Even if we have better and better access to papers and reports around the globe, a large part of the information is still “hidden”. A global database, identifying at least the metadata, would

help greatly our possibilities of collaboration and the visibility of malacofauna.

To conclude, there is no doubt that archaeomalacology has a very promising future, as can be seen from the presentations, the group meeting and the projects that emerged from it.

Oral presentations made during the session:

Is one shell enough? Isotope study of recent mollusc shells and its application in palaeoenvironmental reconstructions - Karina Apolinarska, Mariusz Pelecahty, Annette Kossler, Eugeniusz Pronin, Daria Noskowiak

Archaeomalacological evidence of the site formation processes in the Central Europe - Jarmila Biskova

An aquatic palaeoecology study on Plio-Pleistocene marine mollusc assemblages of Sangiran Dome, Central Java, Indonesia - Marie Grace Pamela Faylona, Anne-Marie Sémah, François Sémah, Pierre Lozouet

A string of marine shell beads from the Neolithic site of Vršnik (Ovce polje, Republic of Macedonia) - Vesna Dimitrijevic, Goce Naumov, Sofija Stefanovic

Shell Ornaments Distributional Patterns in the Aegean and Eastern Mediterranean Bronze Age as Indicators of Identity and Connectivity - Alfredo Carannante

Shells at death – The use of shells in Neolithic mortuary contexts - Heeli Schechter, Daniella E. Bar-Yosef Mayer, A. Nigel Goring-Morris

Neolithic Exchange Networks of Marine Shell Ornaments in the East Jordan Desert Area - Takuro Adachi, Sumio Fujii, Taiji Kurozumi,

Shrimp remains (Crustacea decapoda) in the Roman harbour of Ratiatum (Rezé, Loire Atlantique, France): species identification and biometry – Aurélia Borvon, Yves Gruet

Exploitation of molluscs in Alexandria (Egypt) during the Antiquity: an overview of usages - Nicolas Morand

The exploitation of marine invertebrates along the French Atlantic Coast during the Middle Ages and the early modern period - Laura Le Goff

International and long-distance trade of fresh mollusks and shells: a view from the Byzantine Negev - Inbar Ktalav, Yotam Tepper, Gay Bar-Oz

Cowrie shell modification practices: experimental archaeology and microscopic analysis - Annalisa Christie

Posters:

Application of carbon (^{13}C) and oxygen (^{18}O) stable isotope analysis to determine the origin of shells used to produce ornaments from Neolithic burial sites in central Poland - Karina Apolinarska, Aldona Kurzawska

Investigating the Size of Aquatic Catchments through the Reconstruction of Freshwater Mussel Habitats in Mississippi and Alabama, USA - Sarah Gilleland

Onycha Production and Marine Resources Exploitation on the Red Sea Coasts from Hellenistic times to Late Antiquity. New Archaeomalacological Data from Berenike (Egypt), Adulis and Galala (Eritrea) - Alfredo Carannante, Chiara Zazzaro, Iwona Zych

Acknowledgements

I would like to address my warmest thanks to Daniella Bar-Yosef who gave me this wonderful opportunity and accompanied me with her advice during the organization of the session. She was dearly missed in Ankara. I would also like to extend my sincere thanks to Vesna Dimitrijevic and Annalisa Christie, who agreed to chair the session and to review this summary, and finally to Inbar Ktalav, for her support during the session and review of this summary as well.

Announcement for the next Archaeomalacology Meeting!

Pune, India 2020

Following the success of the Archaeomalacology Meeting in Kirkwall (2016), and recently at Ankara during the ICAZ conference in September 2018, Dr. Arati Deshpande-Mukherjee proposed (and was accepted) to host the next AMWG meeting in Pune, India in 2020. The meeting will be held at the Department of AIHC & Archaeology at Deccan College PGRI in Maharashtra, India. Tentative dates are 11-13 September 2020, followed by a one-day field visit. The sessions will include both oral and poster presentations. More details and announcements will follow in the next issue of the AMWG Newsletter.

Meeting Organiser: [Dr. Arati Deshpande-Mukherjee](#)

SeaChanges – 15 salaried PhD studentships

Thresholds in human exploitation of marine vertebrates - An international doctoral training network

SeaChanges bridges archaeology and marine zoology in order to improve understanding of the time depth of

human exploitation and impact on marine species, and to train a cohort of researchers with the necessary skills to operate across disciplinary and sectoral boundaries to this end. This is achieved via a network of complementary research projects that apply diverse methods to address both socio-economic and ecological themes, covering all of Europe's seas, key marine species, and timescales from decades to millennia. The PhD projects are supported by a programme of dedicated training workshops in bioarchaeology, marine ecology, data management, and communication with stakeholders and the public.

Each PhD studentship is a 3-year position with a highly competitive salary and dedicated research/training

budget, open to applicants of any nationality (subject to rules regarding trans-national mobility). Full eligibility criteria and a list of projects are available on the SeaChanges website.

The formal application process is due to open in March 2019, with successful applicants taking up their positions from October 2019. In the meantime, we invite expressions of interest from potential candidates. If you are interested, please review the project descriptions and eligibility criteria and complete [the form here](#) ideally by March 8th 2019, or email seachanges@palaeome.org for more information.

Website: [SeaChanges](#)

Short Reports & Papers

The conch shell bangle industry through the ages at ancient Vadnagar: preliminary observations

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Introduction

Vadnagar (23° 47' N; 72° 39' E), located in district Mehsana in the north-eastern part of Gujarat, is a fortified town of considerable historical importance due to its many ancient temples, brick structures, gates, etc. The fortification wall of the town is in a semi-circular fashion on its northern segment aligning with the Sharmishta Lake. Six entrance gates were made for this town of which Amarthol is the oldest existing part of the town, while the Arjunbari Gate has an inscription dated to 1152 CE (Fig.1). Several ancient inscriptions and literary sources mention a town called Anartapura or Anandapura, which is identified as the area in and around present-day Vadnagar. This ancient town is believed to have been visited by the Chinese traveller, Hiuen Tsiang, around 641 CE. Hiuen Tsiang recorded that there were more than 1,000 monks of the Sammitiya School or Little Vehicle living in the 10 monasteries at Vadnagar. This suggests that Vadnagar was one of the important centres of Buddhist learning in western India during this period (Rawat, 2011).

Being at the cross roads of two major ancient trade routes (one from central India to Sindh, and the other

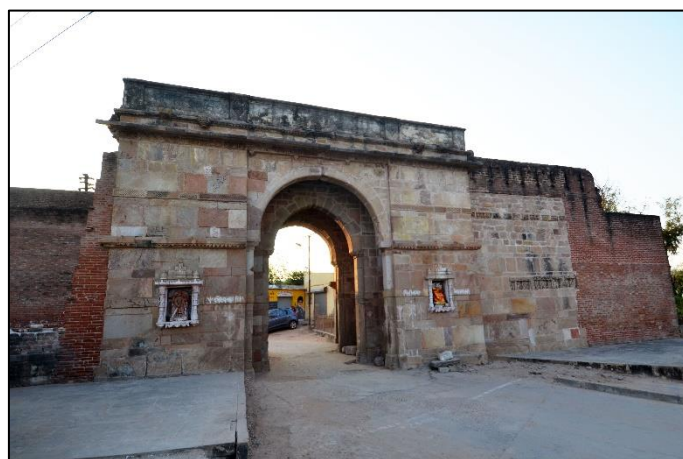


Figure 1. Arjunbari gate at Vadnagar

from the port towns on the Gujarat coast to Rajasthan and north India), Vadnagar was an important trading centre from historical to medieval times, and was also known as one of the important land ports (*Sthal Pattan*) of Gujarat (Rawat, 2011). Due to its rich cultural history, Vadnagar has witnessed a series of excavations, the earliest in 1953 by the Department of Archaeology of the M. S. University of Baroda (Subbarao and Mehta 1955), followed by the State Archaeology department of Gujarat from 2005-2012 (Rawat, 2011) and from 2014-15 to 2018-19 by the Vadodara Excavation Branch of the Archaeological Survey of India. The various excavations have yielded a number of cultural remains including pottery, coins, terracotta figurines, sealings, stone beads etc., and a human face carved out of grey stone (4cm x 2cm) that was found in the Ghaskol area of Vadnagar.

Excavations carried out by the State Archaeology department of Gujarat revealed a monastery with 12 residential cells, that was supposedly used between 2nd century AD and 4th century AD (Rawat, 2011). The excavations by the ASI excavation branch at Vadodara

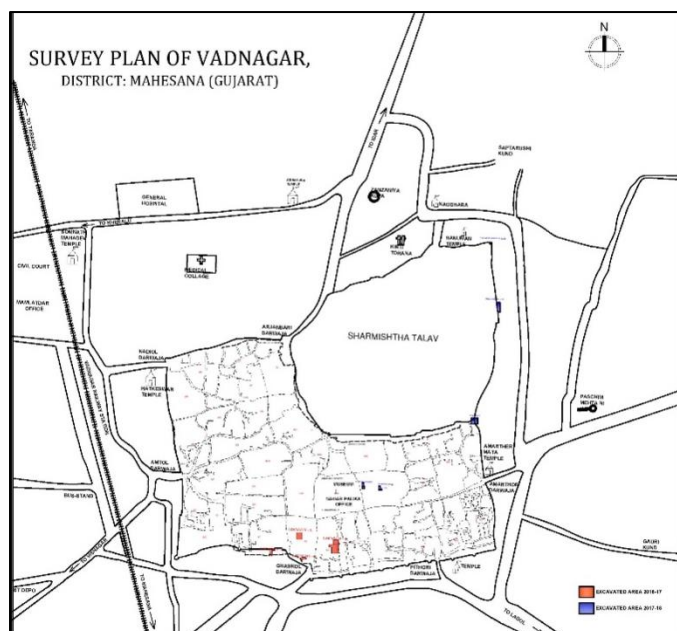


Table 1. Cultural sequence at Vadnagar.



were carried out in locality B, C and D of season 2016-17 and Valmiya-no-mahad, Amba ghat, ESL (eastern side of Sharmistha lake) during season 2017-18 (Fig. 2). The excavations were mainly focused within the fortified city and along the eastern bank of the Sharmistha Lake. The excavation trenches of around 18m deep along the fortification wall revealed seven successive cultural periods of development (Table 1). The first settlers of Vadnagar were of pre 2nd century BCE and contemporary to the Mauryan Empire without any defence system. The city was later protected by an earthen rampart of around 18m wide at its base. As time advanced, the city became prosperous and the earlier earthen defence system was developed into a 12m high brick-built fortification wall, which stands right above the earthen rampart. The prosperity of the city, which reached its zenith during the Post – Kshatrappa and Solanki phases, is evident by the findings of pottery, shell bangles and beads. In the most recent excavation during 2017-18 by the ASI, under the direction of Abhijit Ambekar, a number of interesting finds were recovered and consisted of various shell objects, mainly shell bangles, and other molluscan shell remains. The presence of sawn shell fragments of *Turbinella pyrum* and shell working debitage provides strong evidence for shell working activities at Vadnagar. A detailed study of these shell finds is currently underway. Our preliminary observations are reported here.

All the shell material has been segregated into isolated shells and objects. Shell identification has been carried out by referring to Deshpande (1995) and Apte (1998). Measurements using digital callipers were taken of complete shells and objects like bangles and beads. Taphonomic observations such as breakage patterns, abrasion, charring, cut marks, perforations and state of preservation were recorded. An attempt was made to compare the bangle designs with those from other Historic sites such as Nagara, Somnath and Amreli.

Preliminary results

A variety of molluscan shells belonging to marine, estuarine and freshwater habitats were found in the excavations at Vadnagar (Table 2). The most commonly occurring are sawn shell fragments of the large marine gastropod *Turbinella pyrum* such as apex, columella and main whorl fragments (Fig. 3). From the nature of the breakage and cut marks, it is inferred that the shell fragments resulted from shell working activities involving the manufacture of shell bangles (Fig. 4). The shell objects and fragments were recorded from the late Kshatrapa phase to the early part of the Post Kshatrapa phase. This phase was followed by a decline in shell use to negligible usage during the Solanki phase (Fig. 5).

Table 2. List of molluscs identified at Vadnagar.

Species	Family	Location
<i>Erosaria lamarckii</i>	Cypraeidae	estuarine
<i>Moneta moneta</i>	Cypraeidae	marine
<i>Cypraea annulus</i>	Cypraeidae	marine
<i>Turritella</i> sp	Turritellidae	estuarine
<i>Paphia gallus</i>	Veneridae	estuarine
<i>Anadara</i> sp.	Arcidae	estuarine
<i>Umbonium vestarium</i>	Trochidae	marine
<i>Lamellidens</i> sp.	Unionidae	fresh water
<i>Turbinella pyrum</i>	Turbinellidae	marine
<i>Chicoreus ramosus</i>	Muricidae	marine
<i>Pugilina bucephala</i>	Melongenidae	marine
<i>Agaronia nebulosa</i>	Olividae	estuarine
<i>Placuna placenta</i>	Placunidae	estuarine
<i>Pinctada</i> sp.	Pteriidae	marine
<i>Belamya bengalensis</i>	Viviparidae	freshwater



Figure 4. Sawn apex and columella of *Turbinella pyrum*.

Two shells of the large marine gastropods *Chicoreus ramosus* and *Pugilina bucephala* were found from the Kshatrappa levels. The main whorl of the *C. ramosus* was removed while the *Pugilina bucephala* is a complete shell. These two species have been rarely reported in the Historic period context but were more common during the Harappan civilisation. Other species frequently found include *Erosaria lamarcki*, *Moneta moneta* (money cowrie) and *Cypraea annulus* (ringed cowrie) (Fig. 6). A few estuarine bivalve shells of *Anadara* sp., *Paphia gallus* and *Placuna placenta* and gastropods like *Turritella* sp., were also found. Freshwater gastropods such as *Belamya bengalensis* and bivalves *Lamellidens* sp. also occur and the latter were used for making shell inlays (Fig. 7). As freshwater shells are commonly found in the nearby Sharmishta lake today, these species were probably acquired locally.

Objects

Shell bangles are the most commonly recovered shell objects from Vadnagar. As many as 11,000 shell bangles have been recovered comprising both plain and decorated ones. In the earlier occupation phases few bangles occur, but their quantity gradually increased from the Kshatrappa phase which reached its zenith in the early Post Kshatrappa phase, and then drastically reduced during the Solanki phase (Fig. 8). As many as 29 major varieties of designs, which are further sub-divided into 145 sub-varieties based on its shape, section and designs, have been catalogued. Decorations include channel, grooved lines, rope pattern, central knob, beaded, floral, creeper, etc. (Fig. 9). Bangle cross sections are mainly pentagonal, rectangular, square concave, convex and Plano-convex. An interesting motif identified in the Post Kshatrappa phase is that of a bird (*Garud*) with wings spread. Similar motifs are also visible on the coins.

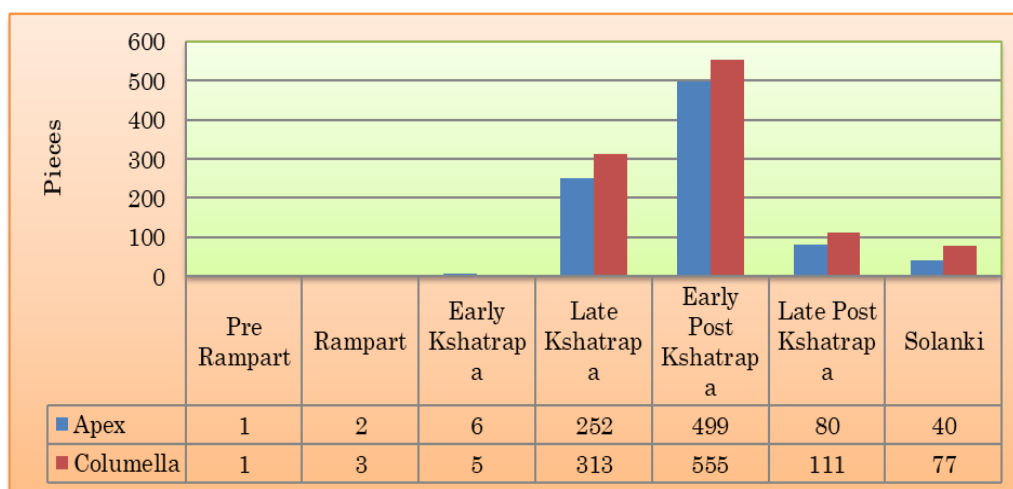


Figure 5. Phase wise distribution of *T. pyrum* shell debitage at Vadnagar



Figure 6. Cowries left *Moneta moneta*, centre *Cypraea annulus*, right *Erosaria lamarcki*.



Figure 7. Cut shell fragments of *Lamellidens* sp. for inlay.

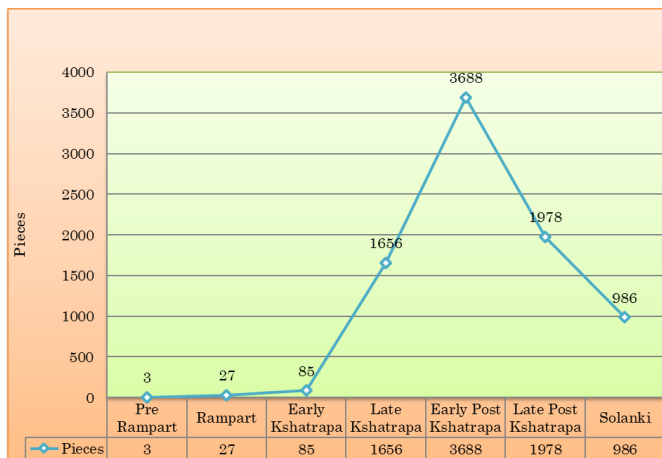


Figure 8. Phase wise distribution of Shell bangles at Vadnagar



Figure 9. Shell bangles from Post Kshatrappa phase.

Plain shell bangles continue throughout all occupation phases and during the Solanki period (11th to 13th century CE.) during which exquisitely carved bangles were produced (Fig. 10 and 11). A few shell bangle fragments with a perforated peacock and incised fish motifs are unique finds of this period.

Shell beads and rings were also made from the *T. pyrum* shell debitage using the columella. The use of shell rings are indicated by the presence of sawn parts like small chips and grooves. Mostly globular beads were made from the columella, disc beads from apex parts and pendants from the body part. From the Solanki phase an irregular-shaped pearl was found which is significant since pearls have been scarcely reported from archaeological sites in India. It is to be noted that a thriving pearl fishery had existed in the Gulf of Kachchh in the past two centuries (Hornell, 1909).

Discussion

The ongoing study of shell bangles and other associated molluscan remains from Vadnagar is providing interesting insights into the shell working activities at the site during different cultural periods. Continuity in the manufacture of shell bangles are observed from the Early Historic to the early Medieval periods. The preliminary observations indicate that good quality *Turbinella pyrum* shells were being procured from the Gulf of Kachchh as it is the nearest source area for these shells. Shell working, involving all stages of manufacture, was carried out in almost all occupation phases and is fairly similar to that carried out in the preceding Harappan civilisation. It is very likely that decorated bangles were traded to other sites in neighbouring parts of Madhya Pradesh and Maharashtra since similar bangle designs have been observed there as well. The presence of intricately carved bangles reveals the highly skilled craftsmanship and technological development of the shell bangle industry, and in turn, reflect the prosperity of Vadnagar in the past. The discovery of a marble stone slab (5x3cm) having a conch shell carved on it from the Solanki phase further attests to its importance (Fig. 12). Besides bangles, beads, inlays and rings use of pearls is also evident. A detailed quantification and qualitative analysis of both the shell debitage and shell bangles would help in accounting for the extent of shell working activities in each phase. On its completion the shell study will be useful for studying technological changes in shell working from the early historic period.

Acknowledgements.

The people of Vadnagar are thanked for their help and cooperation during the excavations.



Figure 10. Shell bangles from Solanki phase.



Figure 11. Shell bangles from Solanki phase



Figure 12. Marble stone with conch depiction.

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Archaeological records of *Megalobulimus* shells as artifacts in South America

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Megalobulimus, a genus of land snail endemic to South America, lives in tropical and subtropical regions and is mainly found in the Amazonas, located in the North Region of Brazil. The southern limit of the species' distribution extends to the central region of Argentina (Bequaert, 1948; Ramirez *et al.*, 2012). The remains of *Megalobulimus* shells in archaeological contexts have been recorded in Argentina, Brazil, Chile, Ecuador, Paraguay, Perú, Uruguay and Venezuela. *Megalobulimus* artifacts have also been recovered at sites outside of the species' distribution area, for example in Caral-Supe, Peru (Shady and Leyva, 2003), in the Atacama region, in Chile (Téllez, 1997), and in the provinces of Rio Negro, Neuquén and Santa Cruz, in Patagonia Argentina. This signifies that *Megalobulimus* shells was an important asset of high value and used in trade and exchange networks. The predominant type of artifact recovered is perforated beads (Fig. 1), however, whole *Megalobulimus* shells were also used as functional containers of substances, or as symbolic objects.

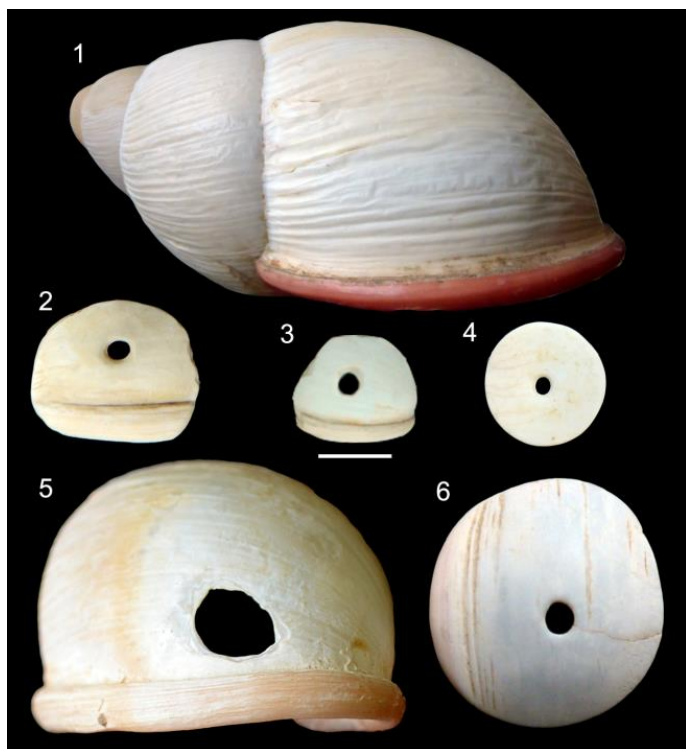


Figure 1. A whole shell of *Megalobulimus lorentzianus* (1), and archaeological perforated beads (2-6) assigned to this taxon. The material was recovered from different sites located in the Province of Córdoba, Central Argentina. Repository: Regional museums in La Para, Las Peñas, Miramar and Cañada Larga.

Two recent findings of *Megalobulimus* shell beads were recovered in association with human skeletal remains. The first at the late Holocene site of Aquihuecó, in Neuquén, which corresponds to a child of c. 11 years. A necklace of *Megalobulimus* shells was found in a mortuary context, and potentially denote exchange networks between north Patagonia and the low coastal areas and the central region of Argentina (Ibañez et al., 2018). The second finding is from the central region of Argentina and corresponds to the human bone remains of a female buried with 32 *Megalobulimus* shell beads. Some of the shell beads represents a novel design in bead making, in that the natural cavity of the shell's umbilical area was used, rather than drilling a hole, to thread the beads. The shells used in bead making varies in shape, design and size (Gordillo and Fabra, 2018). Local museum records further indicate the importance of *Megalobulimus* shell for hunter-gatherer groups who inhabited the central region of Argentina (Gordillo, 2018).

Given this background, archaeological research on *Megalobulimus* shells is currently focused on studying the functionality of *Megalobulimus* shell artifacts as communication tools; either as corporal adornments or as symbolic elements with different connotations, in addition to establishing their value in exchange

networks between different hunter-gather groups and with groups from peripheral regions.

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Dentalium and Olivella Shell Beads from Archaeological Sites of the Snake River Plain, Idaho.

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The distribution of *Dentalium* and *Olivella* shells and shell beads commonly used for adornment by Native American populations have been documented in archaeological sites of the Great Basin and the Plateau (Bennyhoff and Hughes, 1987; Millikan and Schwitalla, 2012; Largaespada, 2006; Sprague, 2004). Though many finds lack exact temporal associations they have been recovered from a range of site types. This brief note provides a frequency distribution of *Dentalium* and *Olivella* shells/beads from the Snake River Plain of southern Idaho based upon a review of the published literature. It is possible that additional examples have been noted in the unpublished cultural resource management literature. *Dentalium* shells or what are

Table 1. Frequency Distribution of *Dentalium* and *Olivella* Shell Beads from archaeological sites of Snake River Plain

Site	Site Type	Age	<i>Dentalium</i>	<i>Olivella</i>	Reference
Braden	Burial	Middle Archaic		3	Butler 1980
Old Ferry Dune	Burial/Open	Middle Archaic		51	Pavesic 1985
Danskin	Rockshelter/Occupation	Late Archaic	2	1	Plew and Osgood 2017
Givens Hot Springs	Open	957-1179 BP	1		Green, personal Communication
Rattlesnake Canyon	Burial/Rockshelter	Late Archaic	47	212	Bonnichsen 1964
Three Island Crossing	Open	(580+/-60-970+/-60		2	Gould and Plew 2001
10-EL-1577	Open	Late Archaic	4		Plew, Huter and Benedict 2002
King Hill Creek	Open	Late Archaic		1	Willson and Plew 2007
Crutchfield	Open	620 +/- 80 BP)	1		Murphey and Crutchfield 1981
Wilson Butte	Cave	1525+/-150 BP	1	2	Gruhn 1961
Meacham	Burial/Rockshelter	Late Archaic	1	27	Gruhn 1960
Baker Cave	Cave/Occupation	810+/-60-930+/- 60 BP	2	1	Plew, Pavesic and Davis, 1987
Aviator's Cave	Cave/Occupation	Late Archaic	1		Lohse 1982
Veratic	Rockshelter/Occupation	Middle Archaic	1		Swanson, 1972
Cottontail	Rockshelter/Occupation	Middle Archaic	1		Swanson, Butler and Bonnichsen, 1962

sometimes referred to as tooth or tusk shells for their cylindrical shape are found along the Northwest coast into southern California while *Olivella* (*Olivella biplicata*, now *Callimaax biplicata*) are found along coastal British Columbia to Baja California, Mexico. AMS radiocarbon dating has documented an early Holocene presence of *Olivella* beads in the Mojave Desert between 10,300 and 10,000 BP (Fitzgerald *et al.*, 2005). To the west of the Snake River Plain in Oregon, Jenkins (2004) reports nine *Olivella* beads dating between 8600-6100 cal BP in the Fort Rock Basin while six *Olivella* beads have been AMS radiocarbon dated at the LSP-1 Rockshelter in Warner Valley, Oregon which date between 3,000 and 9650 BP (Smith *et al.*, 2016:552). The investigation of the Marmes Rockshelter in eastern Washington recovered 12 beads that are dated to between 11,500 and 8,900 cal BP (Rice, 1972). Absolute dates for *Dentalium* beads include 6600-year-old beads from Otter Cave on San Miguel Island (Erlandson *et al.*, 2001). In addition to more exact dating of *Olivella* beads, isotopic analyses have identified what are likely Southern California coastal areas from which beads are derived (Eerkens *et al.*, 2005; 2009).

A total of fifteen sites have produced shell beads. Of these 11 have produced *Dentalium* shells (N=62) and nine sites *Olivella* shell beads (N=300, see Table 1). Eleven sites are habitation sites—five of which are caves

or rockshelters. Three of the rockshelters are burial locations. These sites contain the greater number of items as is the case with the Braden and Old Ferry Dune sites—sites that are part of the Western Idaho Burial Complex (Butler, 1980; Pavesic, 1985). The Rattlesnake Canyon site, a cremation internment near Mountain Home, Idaho contains singularly the greatest number of beads (*Dentalium*-47, *Olivella*-212). Although beads are known to date to the Early and Middle Holocene (Fitzgerald *et al.*, 2005; Jenkins, 2004; Smith *et al.*, 2016) all but two of the sites containing shell beads from southern Idaho date to Late Archaic contexts (2,000-150 BP, Plew, 2016). The exception includes the Braden and Old Ferry Dune sites which by hydration and radiocarbon dating appear to date within the period of 4500-4000 BP (Pavesic: 78-81). Notably, most *Dentalium* and *Olivella* shells/beads are found in Western Idaho (see Figure 1).

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Figure 1. Map showing the location of *Dentalium* and *Olivella* Shells from archaeological sites on the Snake River Plain: 1- Braden, 2-Old Ferry Dune, 3-Danskin, 4-10-EL-1517, 5-Rattlesnake Canyon, 6-Three Island Crossing, 7-10-EL-1577, 8-King Hill Creek, 9-Crutchfield, 10-Wilson Butte Cave, 11-Meacham, 12-Baker Cave, 13-Aviator's Cave, 14-Veratic, 15-Cottontail.

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Abstracts

The 'Lost Caravan' of Ma'den Ijafen Revisited: Re-appraising Its Cargo of Cowries, a Medieval Global Commodity

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Abstract

The lost caravan of Ma'den Ijafen, Mauritania, with its cargo of cowries and brass, is widely discussed in African archaeology, providing significant insight into the nature of long-distance trade in the medieval period. While the brass bars recovered by Théodore Monod during his expedition to the site in 1962 have received considerable attention, the cowrie shells described in his comprehensive publication of the assemblage in 1969 have received much less coverage. This issue was addressed during a recent visit to the Institut Fondamental d'Afrique Noire (IFAN) in Dakar, Senegal in May 2017, when the authors re-examined the shells as part of a wider project which also involved archaeological and environmental surveys in the Maldives, the oft-assumed source of these shells. Examinations of natural history collections of cowries, ethnographic interviews in the Maldives, and environmental surveys in East Africa were also carried out. Drawing on insights from these surveys, we systematically compared the Ma'den Ijafen cowrie assemblage to three others from the Maldives, focussing on four criteria: species composition and diversity, shell size and evidence of modifications. This analysis enabled us to shed new light on the nature of the Ma'den Ijafen cowries and their wider significance to understanding the role of the shells in West African trade networks.

The Efficiency of Flotation Compared with Other Methods for Recovering Assemblages of Terrestrial and Aquatic Gastropods from Archaeological Deposits, with Reference to the Site of Pico Ramos (Basque Country, Spain)

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Abstract

We analysed assemblages of shells of land snails and small aquatic and wetland gastropods from a late Mesolithic-early Neolithic deposit in the cave of Pico Ramos (Basque Country). Shells were recovered by hand during excavation and all excavated deposit was processed by flotation, with a 250 µm mesh to recover floating material and a 1.0 mm mesh to recover the heavy fraction. The total assemblage comprised 5780 individuals (MNI) among 33 taxa, the sieved sub-assemblage having the highest proportions of these (2841 MNI in 31 taxa) and the hand-picked sub-assemblage the lowest (698 MNI in 11 taxa). Eleven taxa were absent from the flotation sub-assemblage, although the recovered MNI (2241; 39% of the total MNI) was high. The palaeoecological implications of the results are considered. Adult and large-sized juvenile shells of the edible land snail *Cepaea nemoralis* are abundant in the hand-picked sub-assemblage, but it is the absence of small-sized juvenile shells in the flotation and wet-sieved sub-assemblages that permits the inference that the species was collected for consumption. Wet sieving is therefore essential, both for interpreting hand-picked samples and in particular for the recovery of representative assemblages of land molluscs.

Call For Papers & Session Proposals

25th Annual Meeting of the European Association of Archaeologist

Bern, Switzerland

4-7 September 2019

For many of us, Bern is the place where the future of Modernity began after Einstein's 1905 Wunderjahr (miracle year or Annus mirabilis), whilst working for the Patent Office in Bern, Einstein published his four papers on the photoelectric effect, the Brownian motion, the special relativity theory and the mass-energy equivalence. On the 100th anniversary of the Dyson-Eddington-Davidson experiment that first tested the General Theory of Relativity, EAA comes to Bern to celebrate its own 25th anniversary. This fold in spacetime is therefore an extremely appropriate occasion to reflect on what our real contribution from Archaeology and Archaeological Heritage has been and can be, for a future in which everything that seemed solid in 1994 has melted away under the pressing threats that challenge an inclusive and progressive idea of Europe. If paradigms become like the mountains, barriers that enclose our lives and experiences, thinking beyond the sets of theoretical barriers we have constructed enables us to discover the fissures in these paradigms that, like the passes through the mountains, foster interaction and convergence. For this very special occasion, we would like to particularly encourage all our members to propose sessions relevant to the main themes of the Annual Meeting that include the "EAA 25" label in their title. These sessions should offer a unique

opportunity to evaluate what has been the contribution of the EAA to the proposed topic throughout its 25 years history, not only with regard to developments in the field, but also with regard to prospects and challenges for the future. EAA particularly welcomes session proposals that reflect on the socio-political dimensions of archaeological knowledge and heritage, in order to facilitate the realignment of accepted practice with current and future requirements.

Themes:

- Archaeological theory and methods beyond paradigms
- Interpreting the archaeological record: artefacts, humans, and landscapes
- Archaeology of mountainous landscapes
- Digital archaeology, science and multidisciplinarity: new methods, new challenges
- Archaeological heritage and museum management: future chances, future risks
- Global change and archaeology

Call for papers / posters is now open. **Deadline for submitting a contribution is 14 February 2019!** Should you have any questions about Bern, venue, accommodation or sponsorship, please contact local organisers Amelie Alterauge, Corinne Staeheli and Albert Hafner at eea2019@iaw.unibe.ch.

Website: [EAA Beyond Paradigms](http://EAA_Beyond_Paradigms)

Conferences & Events

5th International Sclerochronology Conference

Split, Croatia

16-20th June 2019

The conference will take place in the newly opened congress center of the School of Medicine (Multimedia center) located in Ulica Ivana pl. Zajca bb, 21000 Split, Croatia. Sessions include:

- Biomineralization
- Climate and Oceans: Past, Present and Future
- Environmental Biomonitoring & Entrepreneurship

- Fisheries Ecology and Management
- Growth, Bioenergetics and Ecosystems
- Paleoecology and Evolution
- Proxy Development: Challenges and Opportunities
- Sclerochronology and Human-Environmental Interactions: Past and Present

Website: <http://jadran.izor.hr/isc2019/index.html>

INQUA 2019

Dublin, Ireland

25 – 31st July 2019

The Organizing Committee are delighted to bring INQUA to Dublin and would like to warmly welcome you to the 20th INQUA Congress to be held between 25th and 31st July 2019 at the Convention Centre Dublin, located in the heart of the city.

Climate change, sea level rise, ice-ages, human evolution, the migration of peoples, cultures, plants and animals, and the formation of the landscape and habitats of today are all subjects that elicit passion and interest among the public. The little-known term that incorporates all these scientific strands is 'The Quaternary.' INQUA's basic goal is to promote improved communication and international collaboration in experimental and applied aspects of Quaternary research, in order to contribute in practical ways to an evaluation of the scale and rates of global environmental changes during the recent geological past. INQUA considers that a deep knowledge of global developments during the past 2.58 million years (the Quaternary geological period) provides the essential template for assessing the significance of current and predicted global environmental shifts. The Quaternary period witnessed the evolution of modern humans against a back-drop of recurrent advance and retreat of glaciers and continental ice sheets, major oscillations in global sea level, abrupt reorganizations of global meteorological and oceanographic circulation patterns, and a range of other physical and biological adjustments to climate change. The scope of the INQUA2019 Congress will range across all areas of Quaternary research.

Website: www.inqua2019.org

5th International Symposium on Palaeohistology

Cape Town, South Africa

31 July – 4 August 2019

The 5th International Symposium on Palaeohistology will be hosted by the Palaeobiology Research Group of the University of Cape Town at the River Club. This international meeting brings together researchers at all levels (postgraduates, postdocs, established researchers) investigating the histology of mineralised tissues of extant and extinct animals. Online registration

for the 2019 FRWG meeting is now available at <http://www.isph2019.co.za/registration.htm>

Website: <http://www.isph2019.co.za/>

International Council for Archaeozoology (ICAZ): Fish Remains Working Group

Oregon, USA

26-30th August 2019

We are thrilled to bring you a number of announcements regarding the 2019 meeting of the International Council for Archaeozoology (ICAZ): Fish Remains Working Group! Mark your calendars, for the 20th Meeting of the FRWG set for August 26-30, 2019 in Portland Oregon, USA, followed by a weekend field trip to the Oregon Coast. Full details are available from 2019FRWG.com. This site will act as our primary means of interacting with those interested in joining us in Portland. Through the website, you can learn more about the meeting and register to attend. More features such as online abstract submissions and an interactive meeting program will be made available in the coming months. We will be adding more information and options as we move forward, including online registration for the weekend trip and other events.

We created a mailing list to keep all interested parties updated with up-to-date news about the meeting. You can subscribe by filling out the form at the bottom of the 2019FRWG.com site.

Online registration for the 2019 FRWG meeting is now available. Simply visit 2019frwg.com/registration to register now!

First Announcement: III Workshop on Archaeology and Isotopes in southern South America

Pica, Chile

24 - 27th September 2019

The use of stable isotopes in archaeological studies in southern South America has had much development during the last years. This is reflected on the high number of scientific projects and publications related to these topics in national and international journals. Continuing with the research line from previous workshops, the III Workshop on Archaeology and Isotopes in southern South America aims to gather

scientists working in different regions of Latin America and the world to discuss results, new findings, limitations and applications of this technique in archaeological contexts from pre-hispanic and historic South America.

The workshop will be held on the 24th-27th of September at the Santa Rosa Resort in Pica (I region of Tarapacá), a green oasis in the Atacama Desert, northern Chile. The resort has individual rooms, group rooms and cabins. For participants staying in the resort during the workshop, food will be offered. More

information on the sessions, submission deadlines, registration fees and accommodation will follow soon. We are looking forward to seeing you in Pica!

Organising Committee: Pedro Andrade, Universidad de Concepción. Ramiro Barberena, CONICET. Carola Flores, CEAZA. Eugenia Gayó, Center for Research Climate and Resilience Research (CR2). Chris Harrod, Universidad de Antofagasta. María José Herrera, Universidad de Buenos Aires. Francisca Santana Sagredo, Universidad de Antofagasta-Universidad de Oxford.

Recent Publications

PAPERS

Boretto, G., Gordillo, S., Izeta, A., Colombo, F., Martinelli, M., Cattaneo, R. 2017. Cuentas ornamentales en contexto de cazadores-recolectores de la Provincia de Córdoba: Análisis mineralógico y microestructural de la concha de "Borus". *Arqueología* 24 (1): 11-21.

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